

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

Docket No: Q64324

Masayuki MISHIMA

Appln. No.: 09/845,356

Group Art Unit: 1774

Confirmation No.: 2603

Examiner: Marie Rose Yannitsky

Filed: May 1, 2001

For: LIGHT-EMITTING DEVICE

**DECLARATION UNDER 37 C.F.R. § 1.132**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Masayuki Mishima, hereby declare and state:

THAT I am a citizen of Japan;

THAT I graduated from the Graduate School of Engineering, Kyoto University, in March, 1982;

THAT I became employed by Kao Corporation in April, 1982;

THAT I have been employed by Fuji Photo Film Co., Ltd., now FUJIFILM Corporation, since July, 1991;

THAT I am the inventor of the invention described and claimed in the above-identified application, and am familiar with the Office Action of November 12, 2008, and the rejections contained therein.

In order to demonstrate the unexpected superiority of the present invention, the following additional experimentation was conducted by me or under my direct supervision.

In particular, experimental data are set forth below showing that unexpectedly superior effects of the present invention can be obtained by devices using the red light-emitting Ir complex disclosed in Figs. 31, 37 and 43 of Thompson et al.

Additional Examples 17-19

Devices were prepared and evaluated by repeating Example 2 of the present specification except changing the red light-emitting material, bis(2-phenylquinoline)acetylacetatoiridium complex (R-2), to the red light-emitting material shown for Additional Examples 17 to 19 in Table 3 set forth below.

Additional Examples 20-22

Devices were prepared and evaluated by repeating Example 4 of the present specification except changing the red light-emitting material, bis(2-phenylquinoline)acetylacetatoiridium complex (R-2), to the red light-emitting material shown for Additional Examples 20 to 22 in Table 3.

Additional Comparative Examples 5-7

Devices were prepared and evaluated by repeating Additional Comparative Example 3 previously submitted except changing the red light-emitting material, bis(2-phenylquinoline)acetylacetatoiridium complex (R-2), to the red light-emitting material shown for Additional Comparative Examples 5 to 7 in Table 3.

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Table 3

	Blue Light-emitting Material	Green Light-emitting Material	Red Light-emitting Material	Lmax (Cd/m <sup>2</sup> )	Vmax (V)	P (Cd/A)	Light-emitting Wavelength Peak
Additional Example 17	B-1	G-1 (Phosphorescent)	R-14 (Phosphorescent)	42000	10	27	451, 515, 599
Additional Example 18	B-1	G-1 (Phosphorescent)	R-15 (Phosphorescent)	38000	11	24	455, 514, 571
Additional Example 19	B-1	G-1 (Phosphorescent)	R-16 (Phosphorescent)	35000	10	19	453, 515, 637
Additional Example 20	B-2	G-1 (Phosphorescent)	R-14 (Phosphorescent)	72000	10	41	482, 515, 600
Additional Example 21	B-2	G-1 (Phosphorescent)	R-15 (Phosphorescent)	68000	10	42	482, 515, 572
Additional Example 22	B-2	G-1 (Phosphorescent)	R-16 (Phosphorescent)	64000	10	39	482, 515, 638
Additional Comparative Example 5	None	None	R-14 (Phosphorescent)	5500	14	3.5	599
Additional Comparative Example 6	None	None	R-15 (Phosphorescent)	5700	14	3.2	572
Additional Comparative Example 7	None	None	R-16 (Phosphorescent)	3800	15	2.5	636

R-14: Iridium(III) bis(benzothienylpyridine)acetylacetoneate [BTHPi]<sup>2</sup> (from Fig.31 in Thompson)  
R-15: Iridium(III) bis(2-(1-naphthyl)benzoxazole)acetylacetoneate [BONPi] (from Fig.37 in Thompson)  
R-16: Bis(2-phenylbenzothiazole)iridium 8-Hydroxyquinolate [BTI-Q] (from Fig.49 in Thompson)

As can be seen from the results presented in Table 3, the present invention, with its orthometallated complex requirements as recited in the present claims, provides a very high maximum luminance Lmax and a very high light-emitting efficiency P at a low driving voltage Vmax for a device which contains a blue light-emitting material, a green light-emitting material, and a red light-emitting material as compared to a device which contains a red light-emitting material of Thompson but does not satisfy all the requirements recited in the present claims.

Moreover, the results for Additional Examples 17-19, Additional Examples 20-22, and Additional Comparative Examples 5-7 basically correspond to the results respectively provided by Example 2, Example 4, and Additional Comparative Example 3 presented previously, and

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thus confirm those results and provide further evidence of unexpected superiority such that the evidence overall is commensurate in scope with the claimed invention.

Thus, I conclude that the present invention provides unexpectedly superior results.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: June 17, 2009

By: Masayuki Mishima  
Masayuki Mishima